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动物分类学报

# 贵州荔波洞穴匙指虾三新种

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摘 要 记述中国贵州茂兰自然保护区洞穴匙指虾 3 新种，即洞穴米虾 *Caridina caverna* sp. nov. ，锐刺米虾 *Caridina acuta* sp. nov. 和短指新米虾 *Neocaridina brevidactyla* sp. nov.。模式标本保存于上海水产大学。
关键词 匙指虾，米虾属，新米虾属，新种.
中图分类号 Q959. 223. 57

最近，从贵州茂兰自然保护区荔波县山洞的地下水中采到许多匙指虾标本，经鉴定后，有 3 个种认为是新种，报道如下。

## 1 洞穴米虾，新种 Caridina caverna **sp. nov.** (图 1~ 14)

额角较长而平直，基部稍隆起，约伸至第 1 触角柄第 2 节末端到第 3 节中部；上缘具 21 齿，有 7 ~ 8 枚位于眼眶后缘头胸甲上，下缘具 6 齿，位于下缘末半。头胸甲前侧角圆，无颊刺。

尾节背面具 6~ 7 对背刺，后端钝圆，背面中央具 1 三角形的短刺突，末缘具 4 对羽状刺毛。侧刺粗大，约为外后刺的 5 倍。间刺 3 对，以外间刺为稍短小，中央间刺与内间刺约等大。

鳃 9 对，前 4 对步足具肢鳃，为米虾属鳃式。眼角膜退化变小，子弹形，色素消失。

第 1 触角柄刺较长，约伸至靠近第 1 节末端，第 1 节约为第 2 节的 1. 5 倍，第 2 节约为第 3 节的 1. 3 倍。鳞片长约为宽的 3. 4 倍。第 1 颚足内肢外末角具 1 三角锥状短突。第 3 颚足稍超出第 1 触角柄末端；末节短于末 2 节，末 2 节短于末 3 节，末节顶端爪状，末腹缘具 7~ 8 枚短刺。

第 1 步足粗短，约伸至第 1 触角柄第 1 节末端；腕节末缘深凹，长约为宽的 1. 9 倍，螯长约为宽的 2 倍，指节约为掌部的 1. 2 倍。第 2 步足细长，稍超出第 1 触角柄第 2 节末端；腕节末缘稍凹陷，长约为宽的 4. 4 倍，螯长约为宽的 2. 3 倍，指节约为掌部的 1. 4 倍。第 3 步足掌节末端有 1/ 3~ 1/ 4 超出第 1 触角柄末缘；腕节约为掌节的 0. 7 倍，掌节长约为末端宽的 11. 6 倍，约为指节的 4 倍，指节长约为宽的 3. 8 倍，腹缘具 5~ 6 刺。第 5 步足伸至第 1 触角柄第 3 节中部到末端；腕节约为掌节的 0. 5 倍，掌节长约为末端宽的 14 倍，约为指节的 3. 8 倍，指节长约为宽的 4. 6 倍，腹缘具 49~ 51 枚疏状刺。

雄性第 1 腹肢内肢短小，伸不到外肢中部，略呈肾脏形的薄片，短而宽，长约为宽的 2. 1 倍，内缘具短刺，外缘生长刺毛，末端稍粗短；内附肢由内侧末端约 1/ 3 处伸出，伸至稍微超出内肢末端。第 2 腹肢雄附肢略呈大头棍状，基部细，末端膨大，末端和内缘均具粗大的活动刺；内附肢粗壮而宽阔，约伸至雄附肢的 2/ 3，内末角具许多小钩。

尾肢外肢端叶缝具 12~ 13 个活动刺。

生态：生活于海拔 520 m 的岩洞中，洞内无光，洞高 2 m，宽 2. 5 m，洞深为 120 m，水深约 1. 5 m，水清，沙石底质。

正模 ♂( 03-14-1)，体长 20 mm；副模 1 ♀，体长 18 mm，2002-05-07，荔波县洞塘乡板塞村消水洞，陈会明采。

新种额角较长和眼无色素与瞎米虾 *Caridina ablepsia* Guo *et al*. ，1992 略似，除雄性第 1 腹肢内肢形状和雄附肢结构明显不同于后者外，另有细而尖的触角刺。尾节末端背侧中央具 1 短刺突，外间刺较短，中央间刺与内间刺约等大（后者背侧中央无短刺突，中央间刺最为短小）。第 1 触角柄刺较长，第 3 节较短。鳞片较狭长。第 1 颚足内肢外末角具 1 三角锥状突；第 3 颚足末节短于末二节。第 2 步足腕节明显地长于长节（后者稍短于）和第 3 步足腕节较长等均不同于后者。

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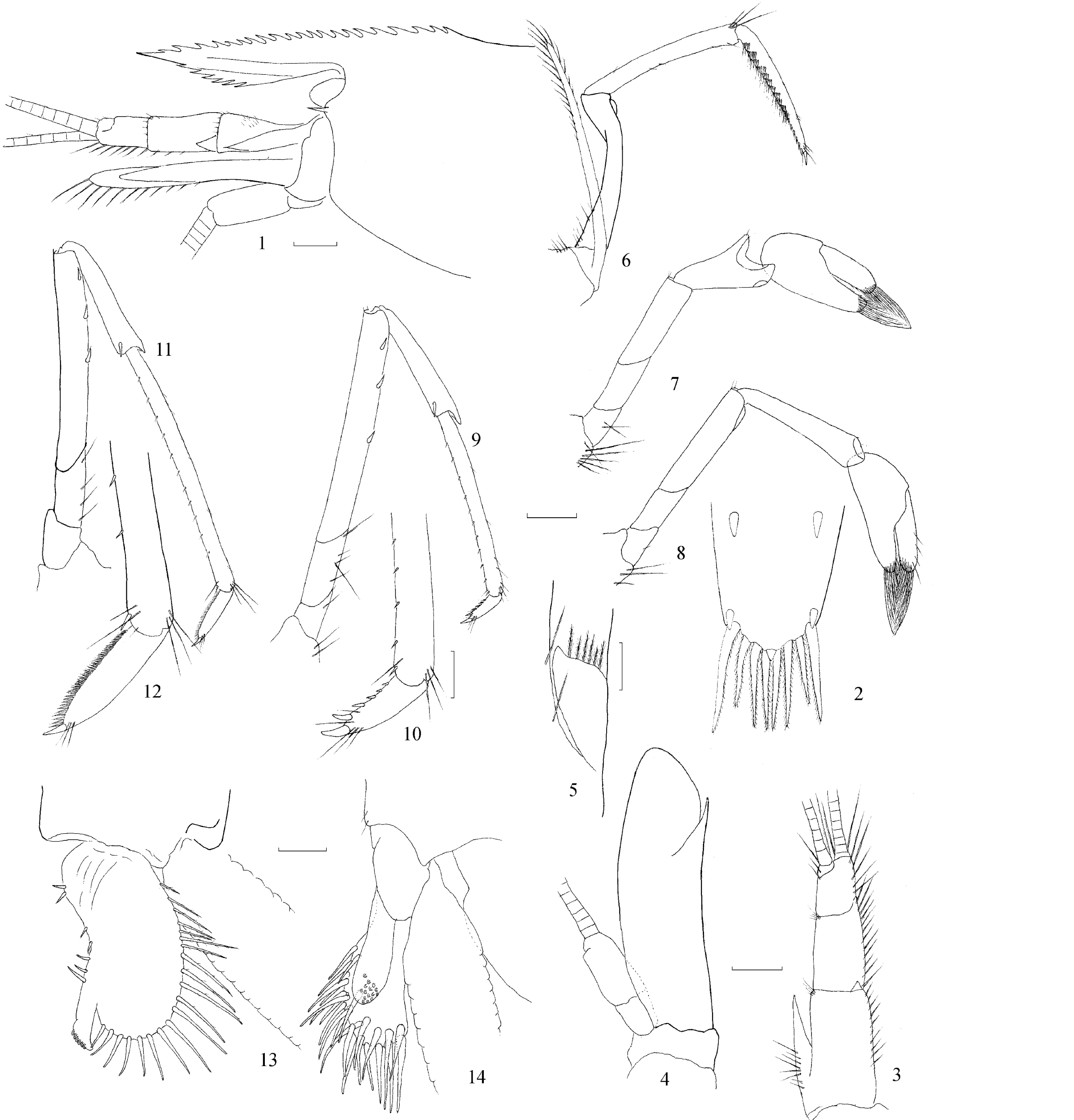


图 1~ 14 洞穴米虾, 新种 *Caridina caverna* sp. nov.

1. 头胸部前端, 侧面观 (anterior portion of cephalothorax, lateral view) 2. 尾节末端, 背面观 (terminal portion of telson, dorsal view) 3. 第 1 触角 (1st antennale) 4. 第 2 触角 (2nd antenna) 5. 第 1 颚足内肢 (endopod of 1st maxilliped) 6. 第 3 颚足 (3rd maxilliped) 7. 第 1 步足 (1st pereiopod) 8. 第 2 步足 (2nd pereiopod) 9. 第 3 步足 (3rd pereiopod) 10. 指节放大 (dactylus of 3rd pereiopod, enlarged) 11. 第 5 步足 (5th pereiopod) 12. 指节放大 (dactylus of 5th pereiopod, enlarged) 13. 雄性第 1 腹肢内肢 (endopod of 1st male pleopod) 14. 第 2 腹肢雄附肢 (appendix masculina of 2nd pleopod) 比例尺 (scale bars): 1~ 4, 6~ 9= 0.5 mm; 5, 10~ 14 = 0.2 mm

## 2 锐刺米虾, 新种 Caridina acuta **sp. nov.** (图 15~ 28)

额角短而平直, 末端稍上翘, 约伸至第 1 触角柄第 1 节末端到第 2 节中部; 上缘具 0~ 2 齿, 下缘无齿。头胸甲前侧角圆, 无颊刺。

尾节背面具 6~ 7 对背刺, 后端钝圆, 背面中央具 1 长三角形的短刺突, 末缘具 4 对羽状刺毛。侧刺稍粗而细长, 约为外后刺的 4 倍。间刺 3 对, 以外间刺稍微短小。

鳃 9 对, 前 4 对步足具肢鳃, 为米虾属鳃式。眼角膜退化, 但仍留有较发达的色素。

第1触角柄刺约伸至靠近第1节末端或稍短于, 第1节约为第2节的1.5倍, 第2节约为第3节的1.3倍。鳞片长约为宽的2.9倍。第1颚足内肢外末角具一角状短突。第3颚足末节约有一半超出第1触角柄末端; 末节长于末2节, 但短于末3节, 末节顶端爪状, 末腹缘具7~8枚短刺。

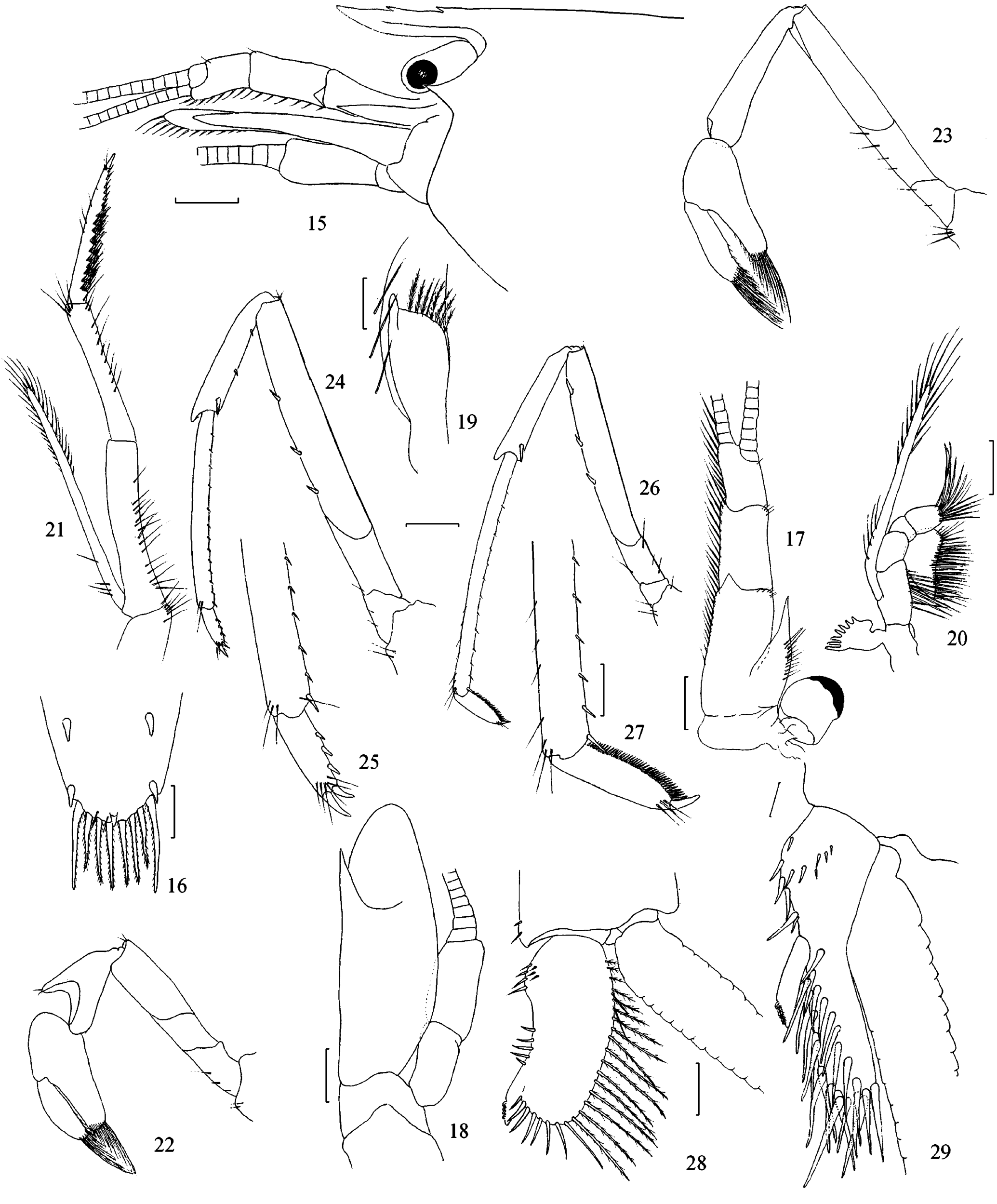


图15~29 锐刺米虾, 新种 *Caridina acuta* sp. nov.

15. 头胸部前端, 侧面观 (anterior portion of cephalothorax, lateral view) 16. 尾节末端, 背面观 (terminal portion of telson, dorsal view) 17. 第1触角 (1st antennale) 18. 第2触角 (2nd antennale) 19. 第1颚足内肢 (endopod of 1st maxilliped) 20. 第2颚足 (2rd maxilliped) 21. 第3颚足 (3rd maxilliped) 22. 第1步足 (1st pereiopod) 23. 第2步足 (2nd pereiopod) 24. 第3步足 (3rd pereiopod) 25. 指节放大 (dactylus of 3rd pereiopod, enlarged) 26. 第5步足 (5th pereiopod) 27. 指节放大 (dactylus of 5th pereiopod, enlarged) 28. 雄性第1腹肢内肢 (endopod of 1st male pleopod) 29. 第2腹肢雄附肢 (appendix masculina of 2nd pleopod) 比例尺 (scale bars): 15, 17~26= 0.5 mm; 16, 27~29= 0.2 mm

第1步足粗短, 约伸至靠近第1触角柄第1节末端; 腕节末缘深凹, 长约为宽的1.7倍, 螯长约为宽的2.2倍, 指节约为掌部的1.1倍。第2步足细长, 约伸至第1触角柄第1节末端; 腕节末缘稍凹陷, 长约为宽的4倍, 螯长约为宽的2.2倍, 指节约为掌部的1.4倍。第3步足掌节末端约1/3超

出第 1 触角柄末缘；腕节约为掌节的 0.8 倍，掌节长约为末端宽的 11.1 倍，约为指节的 3.6 倍，指节长约为宽的 3.8 倍，腹缘具 4 刺。第 5 步足约伸至第 1 触角柄末端；腕节约为掌节的 0.6 倍，掌节长约为末端宽的 13.8 倍，约为指节的 3.9 倍，指节长约为宽的 4.3 倍，腹缘具 43~ 47 枚疏状刺。

雄性第 1 腹肢内肢超出外肢中部，呈肾脏形的薄片，基部明显地膨突，长约为基部宽的 2 倍，末端宽的 3 倍，内缘基部具短刺丛，靠内附肢基部亦具短刺，中部无刺，外缘生长刺毛，末端为短刺；内附肢由内侧末端约 1/3 处伸出，伸至稍超出内肢末端。第 2 腹肢雄附肢略呈短棒状，内缘基部到内附肢基部间具刺，靠基和中部的刺较小，靠内附肢的刺较粗大。雄附肢末端和内缘均具粗大的活动刺；内附肢粗壮，约伸至雄附肢中部，内末角具许多小钩。

尾肢外肢端叶缝具 17~ 18 个活动刺。

生态：生活于海拔 750 m 的岩洞中，洞内有微光，垂直洞深为 30 m，水深约 0.5 m。

正模 ♂(03-21-1)，体长 17 mm，副模 1 ♂，4♀♀，体长 18~ 20 mm，2003-04-08，荔波县翁昂乡吉扰村拉标桥洞，陈会明采。

新种与德门米虾 *Caridina demenica* Cai *et* Li, 1997 相似，由于后者的标本破碎，附肢不全，故比较困难。但从前者较长的额角。特尖锐而发达的触角刺。眼具较发达的色素。柄刺较长。第 3 步足长节约为腕节的 1.7 倍（后者为 1.4 倍）；第 5 步足掌节细而长，长约为末端宽的 13.8 倍。雄性第 1 腹肢内肢形状和尾肢外肢端叶缝刺多等均不同于后者。

## 3 短指新米虾，新种 Neocaridina brevidactyla **sp. nov.**（图 29~ 42）

额角狭长而平直，基部稍隆起，尖端微向下，约伸至第 1 触角柄第 3 节中部或超出其末端；上缘具 14~ 18 齿，有 3~ 5 枚位于眼眶后缘头胸甲上，末部约 1/4 无齿；下缘具 3~ 5 齿，位于下缘末半的基半部。头胸甲前侧角具颊刺。

尾节背面具 5~ 6 对背刺，后端钝圆，背面中央具 1 三角形的短刺突，末缘具 4 对羽状刺毛。侧刺粗大，约为外后刺的 3 倍。间刺 3 对，以外间刺稍短小，中央间刺较粗长。

眼正常，角膜的色素发达。

柄刺较长，约伸至第 1 触角第 1 节末端 5/6，第 1 节约为第 2 节的 1.7 倍，第 2 节约为第 3 节的 1.3 倍。鳞片长约为宽的 3.2 倍。第 1 颚足内肢外末角圆弧状，不具角状突。第 3 颚足稍超出第 1 触角柄末端；末两节约等长，稍长于末 3 节，末节顶端爪状，末腹缘具 8~ 10 枚短刺。

第 1 步足粗短，约伸至靠近第 1 触角柄第 1 节末端；腕节短而宽，末缘深凹，长约为宽的 1.2 倍，螯长约为宽的 1.9 倍，指节约为掌部的 0.8 倍。第 2 步足较细长，稍超出第 1 触角柄第 3 节中部；腕节末缘稍凹陷，长约为宽的 4.6 倍，螯长约为宽的 2.4 倍，指节约为掌部的 1.4 倍。第 3 步足约伸至第 1 触角柄末缘附近；腕节约为掌节的 0.7 倍，掌节长约为末端宽的 9.1 倍，约为指节的 3.3 倍，指节长约为宽的 3.6 倍，腹缘具 6~ 7 刺。第 5 步足约伸至第 1 触角柄第 2 节中部到末端；腕节约为掌节的 0.5 倍，掌节长约为末端宽的 13 倍，约为指节的 3.1 倍，指节长约为宽的 5.3 倍，腹缘具 65~ 70 枚疏状刺。

雄性第 1 腹肢内肢狭长，超出外肢中部，略呈长卵圆形的薄片，末半背面密布钩状小刺，长约为最大宽的 2.3 倍，基部内侧在自然状态下可见到一圆弧形的膨突，内附肢短小。第 2 腹肢雄附肢呈长锥形，短而细小，伸不到内肢中部，背和腹侧的末端与内缘具细长的活动刺，数少；内附肢粗而长，超出雄附肢的末端，内末缘具多数小钩。

尾肢外肢端叶缝具 12~ 13 个活动刺。

生态：生活于海拔 630 m 的岩洞中。

正模♀（03-16-1），体长 20 mm。副模 2♀♀，1 ♂，体长 15~ 20 mm，2002-05-07，荔波县洞塘乡板塞村消水洞，陈会明采。

新种雄性第 1 腹肢内肢和第 2 腹肢雄附肢形状和结构极似细肢新米虾 *Neocaridina gracilipoda* Liang, 2004，但前者的第 1 对步足指节非常明显地短于掌部，螯肥大（上述特征本属此前仅报道于巴马新米虾 *Neocaridina bamana* Liang, 2004），腕节短而宽，长约为宽的 1.2 倍。第 5 对步足指节短而窄，掌节约为指节的 3.2 倍，指节狭长，长约为宽的 5.3 倍和第 1 触角基节较短等不同于后者。

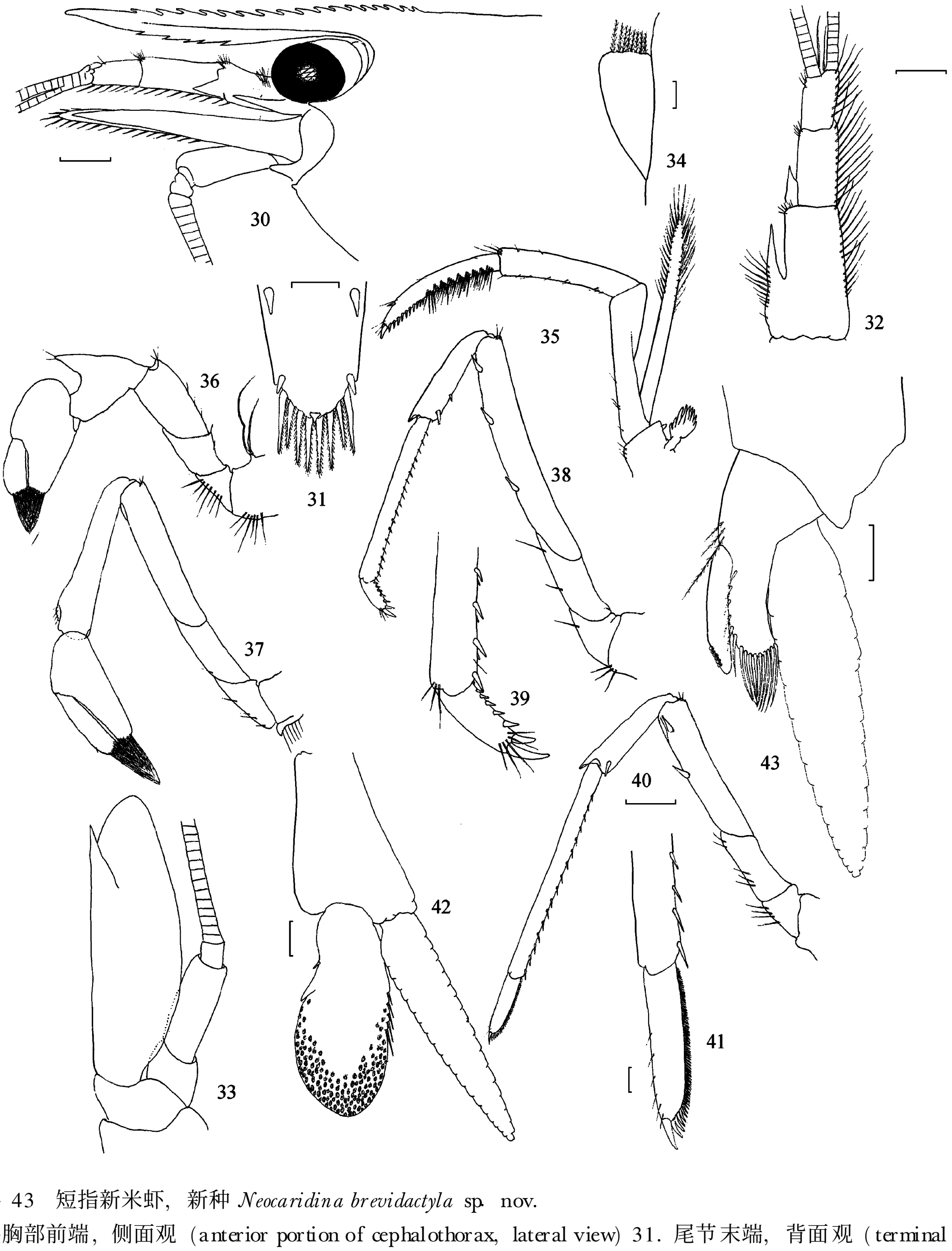


图 30~ 43 短指新米虾, 新种 *Neocaridina brevidactyla* sp. nov.

30. 头胸部前端, 侧面观 (anterior portion of cephalothorax, lateral view) 31. 尾节末端, 背面观 (terminal portion of telson, dorsal view) 32. 第 1 触角 (1st antennale) 33. 第 2 触角 (2nd antenna) 34. 第 1 颚足内肢 ( endopod of 1st maxilliped) 35. 第 3 颚足 (3rd maxilliped) 36. 第 1 步足 (1st pereiopod) 37. 第 2 步足 (2nd pereiopod) 38. 第 3 步足 (3rd pereiopod) 39. 指节放大 (dactylus of 3rd pereiopod, enlarged) 40. 第 5 步足 (5th pereiopod) 41. 指节放大 (dactylus of 5th pereiopod, enlarged) 42. 雄性第 1 腹肢内肢 (endopod of 1st male pleopod) 43. 第 2 腹肢雄附肢 (appendix masculina of 2nd pleopod) 比例尺 (scale bars): 30, 32, 40= 0. 5 mm; 31, 33, 35~ 39= 0. 2 mm; 34, 41~ 43= 0. 1 mm

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# THREE NEW SPECIES OF ATYID SHRIMPS (DECAPODA, CARIDEA) FROM CAVES OF GUIZHOU, CHINA

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**Abstract** The present paper describes three new species of atyid shrimps. The specimens were collected from many caves of Libo County (25°41′N, 107°83′E) of Maolan Nature Sanctuary of Guizhou. Specimens are deposited in the Shanghai Fisheries University.

*Caridina caverna* **sp. nov.** (Figs. 1-14)

Rostrum reaches to the middle of 3rd segment of the antennular peduncle. The dorsal border bears 21 teeth, 7-8 of which are situated on the carapace behind the orbit. The ventral border bears 6 teeth.

The eyes are degenerated, and the cornea have no pigments.

The carpus of 1st pereopod is about 1.9 times as long as wide, and that of 2nd pereopod is about 4.4 times. The dactylus of 3rd pereopod bears 5-6 spinules. The propodus of 5th pereopod is about 14 times as long as wide at the extremity.

Holotype ♂ (03-14-1), paratype 1♀, 7 May 2002, by CHEN Hui-Min.

Remarks. The present new species is closely allied to *Caridina ablepsia*, but differs from latter in following features: the antennal spines are smaller and pointed. The telson bears a short posteromedian tooth; the outer intermediate spinules are shorter than all other intermediate spinules; the median intermediate spinules are about as long as the inner intermediate spinules. The 3rd segment of the antennular peduncle is shorter than 2nd segment. The stylocerite is longer. The scaphocerite is narrower. The endopod of 1st maxilliped is with a projecting corner-shaped at the distally outer border. The ultimate segment of 3rd maxilliped is shorter than the penultimate segment. The carpus of 2nd pereopod is longer than the merus. The carpus of 3rd pereopod is longer. The shape and structure of the endopod of 1st male pleopod and the appendix masculina are different.

*Caridina acuta* **sp. nov.** (Figs. 15-29)

Rostrum is shorter, and it reaches to the extremity of 1st segment to the middle of 2nd segment of the antennular peduncle. The dorsal border bears 0-2 teeth, and the ventral border is no teeth.

The eyes are degenerated, the talk is shorter, and the cornea have rather developed pigments.

The carpus of 1st pereopod is about 1.7 times as long as wide, and that of 2nd pereopod is about 4 times. The dactylus of 3rd pereopod bears 4 spinules. The propodus of 5th pereopod is about 13.8 times as long as wide at the extremity.

Holotype ♂(03-21-1), paratypes: 1 ♂, 4♀♀, 8 Apr. 2003, by CHEN Hui-Min.

Remarks. The present new species is closely allied to *Caridina demenica*, but differs from latter in following features: the rostrum is longer. The antennal spines are developed, and it is longer and pointed. The cornea have rather developed pigments. The stylocerite reaches to the extremity of 1st segment of the antennular peduncle. The merus of 3rd pereopod is about 1.7 times as long as the carpus. The propodus of 5th pereopod is about 13.8 times as long as wide at the extremity. The endopod of 1st male pleopod is expansive at the base of the inner border. The teeth of the diaeresis are more in number.

*Neocaridina brevidactyla* **sp. nov.** (Figs. 30-43)

Rostrum reaches to the extremity of 3rd segment of the antennular peduncle. The dorsal border bears 14-18 teeth, 3-5 of which are situated on the carapace behind the orbit. The ventral border bears 3-5 teeth.

The dactylus of 1st pereopod is shorter than the palm; the chela is about 1.9 times as long as wide; the carpus is about 1.2 times as long as wide. The propodus of 5th pereopod is about 3.2 times as long as the dactylus, which is about 5.3 times as long as wide.

The endopod of 1st male pleopod is long oval, and about 2.3 times as long as wide; the base of the inner border bears with a arc of shorter process. The appendix masculina of 2nd pleopod is smaller and shorter, and the spines are less in number. The appendix interna is longer, and it reaches beyond the end of the appendix mesculina.

Holotype ♀ (03-16-1), paratypes: 2♀♀, 1 ♂, 7 May 2002, by CHEN Hui-Min.

Remarks. The shape and structure of the endopod of 1st male pleopod and the appendix masculina of 2nd pleopod of the present new species are closely allied to *Neocaridina gracilipoda*, but differs from latter in following features: the dactylus 1st pereopod is shorter than the palm. The chela is wider, and it is about 1.9 times as long as wide. The carpus is very short and wide; it is triangular, and about 1.2 times as long as wide. The propodus of 5th pereopod is about 3.2 times as long as the dactylus; the dactylus is narrower, and it is about 5.3 times as long as wide.

**Key words** Atyid shrimp, *Caridina*, *Neocaridina*, new species.